

## Abstract

A ranking-based automatic dark compensation circuit for efficiently estimating dark level in a CCD or CMOS image sensor. The ranking circuit comprises of  $k$  staggered comparators, each comparator having an associated temporary result register. Each comparator having two inputs, with the first input coupled to an output of the previous stage comparator and the second input coupled to its associated temporary result register. The temporary results are initialized to the largest possible dark value. At each stage, a comparison is made of a new input sample to a stored value of the temporary register. If the new sample is greater than the value of the associated temporary register, the value in temporary register is not changed and the new sample is passed to the next comparator. Conversely, if the new sample is smaller, then that new sample is stored into the temporary register, while the original temporary result is passed to the next comparator. The temporary result of the last stage is the final estimated dark level output.